**BEFORE THE PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

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# COMMENTS OF QADO ENERGY, INC. ON THE STAFF PROPOSAL REGARDING ISSUES, PRIORITIES AND RECOMMENDATIONS FOR ENERGY STORAGE INTERCONNECTION

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Dated: September 12, 2014

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*Request for Comment #1:*
*Please comment on the practicalities of reducing interconnection study times by standardizing study data and system characteristic into algorithms made accessible through a visual platform. Please describe the potential benefits and expected costs of instituting such technology advancement in utility interconnection departments.*

Today, across many of the utilities in the United States, interconnection study times range between 30 to 90 days to complete. By leveraging the vast processing and computing power of cloud-based systems, utilities will be able to reduce interconnection study times down to minutes. This type of automation will enable engineers to access and review analysis results without needing to first painstakingly assemble data from multiple sources or construct and iterate analysis scenarios by hand. Simultaneously, the standardization afforded by the automation leads to more consistent and effortless enforcement of best practices as well as output of documents that are standard in format and thus easier to review.

Currently a cost-effective, high-performance computing software solution is possible through cloud computing technology coupled with the new advancements in distribution grid modeling, simulation and IEC smart grid data standardization. It enables data to be managed in the non-proprietary IEC CIM open data file format — it models, simulates, visualizes and generates cost estimates (if any) to accommodate the distributed energy resources requesting

interconnection and it enables same day turn-around times. This solution supports California's grid evolution and climate goals by enabling high-resolution engineering and cost analysis to be continuously conducted and refined to ensure cost-effective grid advancement and on-going system reliability. We propose the IOUs be provided cost recovery for their investment in this type of software solution.

Three key features would ensure process standardization, data standardization, and a common language for communicating results. Firstly, the software solution should construct feeder models automatically from GIS, data historians, the project application and other databases, and store them in the IEC common information model format developed for the smart grid. Having data available in this way will enable submitted IC applications to be automatically routed to applicable technical screenings and then to impact evaluations if required by technical screenings. Removing the need for engineers to manually collect and prepare data contributes significantly to timely completion and preserves engineering time for domain expert functions.

Secondly, the solution should use scripted analysis and evaluation methods that can be updated and changed by non-IT resources in order to support the dynamic evolution of the distribution system and the state's regulations. Automated construction of cost estimates and impact study reports eliminates a tedious step from the engineer's responsibilities, freeing them to concentrate on the unique attributes of the current study (which also will be easier with the resulting predictable-format report). Standardization of the generated documents will contribute to improved review times, not only in the present, but also when future reviews of historical studies become necessary. This standardization ensures that different engineers arrive at similar study results on the same project.

Lastly, the modeling and analytics technologies should perform quasi-static power flow analysis over any time series, use local weather data, use actual circuit loading data, and calculate the costs of the mitigation strategies that are necessary to ensure continued system reliability in conjunction with the proposed interconnection. When multiple mitigation options and their cost estimates are identified by the software, fact-based decisions are possible.

The capabilities outlined above are commercially available today and are being deployed to select utilities around the country. Using the software solution, comprehensive interconnection impact analysis may be initiated and completed in one day. Broad adoption of these capabilities would fundamentally change how we think about the interconnection process and cost allocation. It would also help streamline grid advancement while ensuring a disciplined engineering based approach to system reliability is maintained.

Respectfully submitted,

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